

4-Nonylphenol, Branched [84852-15-3]

Results of Testing

Chemical Name	CAS No.	Study Code/Type	Protocol/Guideline	Species	Exposure	Dose/Concentration	No. per Group	Results	Reference
4-Nonylphenol, Branched	84852-15-3	EEATOX Acute algal toxicity	40 CFR 797.1050	<i>Skeletonema costatum</i> (marine alga)	static, 96 hr	0, 0.015, 0.03, 0.06, 0.12, 0.24 mg/L (nominal)	Not specified	Exposure to the algae to the test substance for 96-hours resulted in a median effective concentration (EC ₅₀) of 0.024 mg/L. Algae transferred from the flasks containing the highest concentration that allowed any algal survival (0.12 mg/L) to a flask containing fresh media without the test substance grew from 15,950 to 1,220,000 cells per mL during the 48-hrs following the conclusion of the test, indicating a lack of algistatic effect.	55 FR 53348; 12/28/90 OTS0531523
4-Nonylphenol, Branched	84852-15-3	EEATOX Acute mysid shrimp toxicity	40 CFR 797.1930	<i>Mysidopsis bahia</i> (mysid shrimp)	flow through, 96 hr	0, 0.006, 0.010, 0.016, 0.025, 0.042 mg/L (nominal)	20/group (10/replicate)	Exposure of mysids to the test substance resulted in a 96-hour median lethal concentration (LC ₅₀) of 0.042 mg/L. The mean percent of mysids surviving was: 100% in control, 0.006, 0.010, and 0.016 mg/L; 85% at 0.025 mg/L; and 40% at 0.042 mg/L. A portion of the mysids exposed to 0.042 mg/L were pale from 24-hours until the end of the test. No other sublethal effects were observed during the test. The no observed effect concentration (NOEC) is 0.016 mg/L.	55 FR 53348; 12/28/90 OTS0531523
4-Nonylphenol, Branched	84852-15-3	EEATOX Chironomid sediment toxicity	40 CFR 795.4050	<i>Chironomus tentans</i> (midge)	flow through, 20 °C, 14 days. 3 exposures: aqueous with minimal sand substrate (dosed water); aqueous in presence of sediment (interstitial water); sediment in presence of untreated water column (dosed sediment).	0.023, 0.044, 0.076, 0.150, 0.320 mg/L (dosed water); 0.00719, 0.0205, 0.0387, 0.081, 0.146 mg/L (interstitial water); 2.34, 4.79, 9.51, 20.1, 34.2 mg/kg (dosed sediment)	10	LC ₅₀ = 0.119 mg/L (dosed water), 0.075 mg/L (interstitial water). There was insufficient mortality to calculate a LC ₅₀ for dosed sediment. MACT for survival were 0.107 mg/L (dosed water), 0.056 mg/L (interstitial water), and 26 mg/kg (dosed sediment). EC ₅₀ based on observed adverse effects (paleness, reduced size, lethargy, and mortality) were 0.095 mg/L (dosed water) and 0.041 mg/L (interstitial water). There were insufficient adverse effects to calculate a E ₅₀ for sediment. MACT for growth were 0.107 mg/L (dosed water), 0.030 mg/L (interstitial water), and 26 mg/kg (dosed sediment).	Docket OPPTS-42104B

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4-Nonylphenol, Branched	84852-15-3	EEATOX Acute algal toxicity	40 CFR 797.1050	<i>Selenastrum capricornutum</i> (freshwater alga)	static, 96 hr	0, 0.06, 0.12, 0.25, 0.50, 1.0 mg/L (nominal)	3 replicates/group	Exposure of algae to the test substance for 96-hours resulted in a median effective concentration (EC ₅₀) of 0.50 mg/L. Algae transferred from the test flasks containing the highest tested concentration to a flask containing fresh media without the test substance grew from 9700 to 1,940,000 cells per mL during the 7 days following the conclusion of the test, indicating a lack of algistatic effect.	55 FR 53348; 12/28/90 OTS0531523
4-Nonylphenol, Branched	84852-15-3	EEATOX Acute fish toxicity	40 CFR 797.1400 (modified)	<i>Cyprinodon variegatus</i> (sheepshead minnow)	flow through, 96 hr	0, 0.075, 0.125, 0.19, 0.31, 0.50 mg/L (nominal)	20/group (10/replicate)	Exposure of fish to the test substance resulted in a 96-hour median lethal concentration (LC ₅₀) of 0.31 mg/L. The mean percent of fish surviving was: 95-100% in control, 0.75, 0.125, 0.19, and 0.31 and 0% at 0.50 mg/L. All fish exposed to 0.50 mg/L were lethargic, bloated, and/or exhibiting a loss of equilibrium from 24 hours until they died. No other sublethal effects were observed during the test. The no observed effect concentration (NOEC) is 0.31 mg/L.	55 FR 53348; 12/28/90 OTS0531523
4-Nonylphenol, Branched	84852-15-3	EEBIOC Fish bioconcentration	40 CFR 797.1520	fathead minnow	flow-through, unaerated, 20 days	4.9, 22.7 µg/L	Not specified	After the test exposure period, the animals were exposed to diluted water without the test substance for 7 days. The BCF was 344, with an uptake rate constant of 193, and a depuration rate constant of 0.56 at 22.7 µg/L. The BCF was 271, with an uptake rate constant of 133, and a depuration rate constant of 0.49 at 4.9 µg/L	57 FR 3203; 1/28/92, Docket OPPTS- 44580
4-Nonylphenol, Branched	84852-15-3	EECLIF Fish early life stage	40 CFR 797.1600	<i>Pimephales promelas</i> (fathead minnow)	flow-through, 33 days	0, 3.0, 6.0, 9.0, 15, 25 µg/L (nominal)	60/group (30/replicate)	Exposure of embryos, larvae, and juvenile fish to the test material resulted in a lowest observed effect level (LOEL) of 14 µg/L, a no observed effect level (NOEL) of 9.0 µg/L, and a maximum acceptable toxicant concentration (MATC) of 10.2 µg/L. The most sensitive measured effect was survival of fathead minnows at the conclusion of the test. Fish exposed to the control and the 3.0, 6.0, and 9.0 µg/L began to hatch on the 3rd day of exposure, while fish exposed to 14 and 23 µg/L did not begin to hatch until the 4th day. No statistically significant effects were noted at any test concentration of the number of embryos hatched, the time to first feeding, or length and weight of surviving fish. No sublethal effects were noted during the study.	56 FR 27961; 6/18/91 OTS0531525

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4-Nonylphenol, Branched	84852-15-3	EECTOX Mysid shrimp chronic toxicity	40 CFR 797.1950	<i>Mysidopsis bahia</i> (mysid shrimp)	flow-through, 28 days	0, 4, 8, 12, 18, 30 µg/L	Not specified	Exposure to mysids to the test material resulted in a lowest observed effect level (LOEL) of 8 ug/L, a no observed effect level (NOEL) of 4 µg/L, and a maximum acceptable toxicant concentration (MATC) of 5.1 ug/L. The total length of surviving mysids was the most sensitive biological parameter measured. Other parameters were survival of mysids after 28 days, the number of young per female, and sublethal effects.	56 FR 27961; 6/18/91 OTS0531525
4-Nonylphenol, Branched	84852-15-3	EECTOX Tadpoles/sediment subchronic toxicity	Non-TSCA Protocol/ Guideline (docket OPTS-42104B)	<i>Rana catesbiana</i>	30 days	36, 57, 155, 390, 680 mg/kg (dry wt)	10/replicate	The LC ₅₀ value is 260 mg/kg. The EC ₅₀ value is 220 mg/kg. The NOEL is 155 mg/kg. The LOEL is 390 mg/kg. The MATC is 250 mg/kg.	57 FR 21657; 5/21/92, Docket OPPTS-44585
4-Nonylphenol, Branched	84852-15-3	EFBDEG Microcosm biodegradation (ecocore)	Non-TSCA Protocol/ Guideline (docket OPTS-42104B)	Not applicable	25 °C, 10 days	5.4 mg/L	15 ecocores	The test substance was determined to not have mineralized. Volatilization played a minor role in removal of the test substance from the ecocores, accounting for an average of less than 1% of the initial spike. The concentration of the test substance in water declined at approximately the same rate over time as in controls. The concentration of the test substance adsorbed to sediment did not decline appreciably and accounted for approximately one-half of the initial spike.	56 FR 12202; 3/22/91 OTS0531524
4-Nonylphenol, Branched	84852-15-3	EFBDEG Anaerobic aquatic biodegradation	40 CFR 796.3140	anaerobic digester sludge	Not specified	Not specified	Not applicable	The cumulative gas production of the test substance was less than that of the control, resulting in a negative percent of theoretical gas production value. The control substance, ethanol, at a concentration of 50 mg C/L, evolved 101.1% of its theoretical gas production, indicating a viable inoculum and valid test system.	56 FR 12202; 3/22/91 OTS0531524
4-Nonylphenol, Branched	84852-15-3	EFPCHE Crystallization point	40 CFR 796.1230 (modified)	Not applicable	Not applicable	Not applicable	Not applicable	The crystallizing point was determined to be -24.5 °C	55 FR 37356; 9/11/90, OTS- 0527282, Docket OPPTS-44558, 42104
4-Nonylphenol, Branched	84852-15-3	EFPCHE Boiling point	40 CFR 796.1220	Not applicable	Not applicable	Not applicable	Not applicable	The boiling point is greater than 573 K. However, data from the present study indicate that the test substance will thermally decompose before boiling.	55 FR 37356; 9/11/90, OTS- 052782, Docket OPPTS-44558, 56 FR 12202; 3/22/91

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4-Nonylphenol, Branched	84852-15-3	EFPCHEDISS Dissociation constants	40 CFR 796.1370	Not applicable	Not specified	Not specified	Not applicable	The mean pK of the test substance was determined to be 10.7, with a range of 10.6 to 10.8.	55 FR 37356; 9/11/90; 56 FR 12202; 3/22/91, OTS0531524
4-Nonylphenol, Branched	84852-15-3	EFPCHEPART Partition coefficient	40 CFR 796.1550	Not applicable	Agitated for 1 hr at 25 °C and centrifuged 10,000 g for 30 min.	100 µL	Not applicable	Mean log K _{ow} values at pH 5, 7, and 9 are 4.77, 4.70, and 4.75, respectively.	56 FR 12202; 3/22/91, OTS-0531524
4-Nonylphenol, Branched	84852-15-3	EFPCHEVPRE Vapor pressure	40 CFR 796.1950	Not applicable	25 ± 0.5 °C	Not applicable	Not applicable	4.55 x 10 ⁻³ Pa (std. dev. = 3.54 x 10 ⁻³ Pa)	55 FR 37356; 9/11/90, OTS-0527282, Docket OPPTS- 44558, 42104
4-Nonylphenol, Branched	84852-15-3	EFPCHEWSOL Water solubility	40 CFR 796.1860	Not applicable	pH 5, 7, and 9; 25 °C	Not applicable	Not applicable	4600 µg/L (pH 5), 6237 µg/L (pH 7), 11,897 µg/L (pH 9)	55 FR 37356; 9/11/90, OTS-0527282, Docket OPPTS-44558, 42104
4-Nonylphenol, Branched	84852-15-3	EFPCHEWSOL Water solubility	40 CFR 796.1860	Not applicable	seawater	Not applicable	Not applicable	The seawater solubility value was calculated as the mean dissolved test substance concentration in the three test samples. The solubility of the test substance in artificial seawater was determined to be 3.63 mg/L.	56 FR 12202; 3/22/91 OTS-0531524
4-Nonylphenol, Branched	84852-15-3	EFTSPT Soil and sediment adsorption isotherm	40 CFR 796.2750	Not applicable	6 days (equilibrium achieved on day 3)	10, 20, 40, 60, 80, and 100 mg/L	Not applicable	The results of this study indicate that the test substance may be expected to adsorb strongly to soils and sediments in the environment.	56 FR 12202; 3/22/91, OTS-0531524